

Section II. (Remarks)**Amendment/Addition of New Claims**

Claims 1, 2, 14 and 15 have been amended herein to better demarcate the subject matter of applicants' claimed invention.

Claim 1 has been amended to recite that the region through which the air exhaust is flowed is a "discrete volumetric region" of the clean room, consistent with the disclosure at paragraph [0011] of the application:

"[0011] The heat/general exhaust in the semiconductor manufacturing plant or other process facility hereinafter is referred to as "air exhaust" and denotes an air stream that is flowed through process tool housings, cabinets, fume regions, abatement units, containment enclosures, and other discrete volumetric regions within the plant, for example, as (i) a "sweep gas" to shroud, transport or dilute contaminants that pose a health, safety, or environmental risk to persons and/or processes in the plant, and/or (ii) a convective heat transfer medium, to remove heat from equipment (e.g., fab tools such as ion implanters, vaporizers and vapor deposition reactors, plasma generators, etc.), regions and/or other process streams associated with semiconductor manufacturing operation."

Consistent with such amendment of claim 1, claim 2 has been amended as set out below, to specify the discrete volumetric region consistent with the disclosure in paragraph [0011]:

"2. (Currently amended) The semiconductor manufacturing process facility of claim 1, wherein said discrete volumetric region includes a region selected from the group consisting of process tool housings, cabinets, fume regions, abatement units, and containment enclosures, and wherein the treated air exhaust is discharged from the air exhaust treatment apparatus to the gray room of the facility."

Corresponding amendments have been made in method claims 14 and 15.

New claims 24-30 have been added to recite specific further aspects of the applicants' invention, consistent with the disclosure in the specification. No new matter (35 USC 132) has been added.

Rejection under 35 U.S.C. §103(a)

In the December 20, 2004 Office Action, the Examiner rejected claims 1-23 on reference grounds, including a rejection of claims 1-5, 9-17 and 19-23 under 35 U.S.C. §103(a) as being unpatentable over O'Halloran et al. U.S. Patent No. 65,972,060 (hereinafter O'Halloran), and a rejection of claims 6-8 and 18 under 35 U.S.C. §103(a) as being unpatentable over O'Halloran in view of Homeyer et al. U.S. Patent No. 6,280,691 (hereinafter Homeyer). Applicants traverse such rejections, and respectfully request reconsideration of the claims as amended/added herein, based on the ensuing remarks.

Patentable Distinction of Claims as Amended/Added, Over the Cited References

As indicated above, claim 1 has been amended to recite that the region through which the air exhaust is flowed is a "discrete volumetric region" of the clean room, consistent with the disclosure at paragraph [0011] of the application:

"[0011] The heat/general exhaust in the semiconductor manufacturing plant or other process facility hereinafter is referred to as "air exhaust" and denotes an air stream that is flowed through process tool housings, cabinets, fume regions, abatement units, containment enclosures, and other discrete volumetric regions within the plant, for example, as (i) a "sweep gas" to shroud, transport or dilute contaminants that pose a health, safety, or environmental risk to persons and/or processes in the plant, and/or (ii) a convective heat transfer medium, to remove heat from equipment (e.g., fab tools such as ion implanters, vaporizers and vapor deposition reactors, plasma generators, etc.), regions and/or other process streams associated with semiconductor manufacturing operation."

Claim 1 now recites

"1. (Currently amended) A semiconductor manufacturing process facility requiring use therein of air exhaust for its operation, said facility including clean room and gray room

components, with said clean room having at least one semiconductor manufacturing tool therein, and wherein air exhaust is flowed through a discrete volumetric region of said clean room, said facility comprising an air exhaust treatment apparatus arranged to (i) receive air exhaust after flow thereof through said discrete volumetric region of said clean room, (ii) produce a treated air exhaust, and (iii) recirculate the treated air exhaust to an ambient air environment of the facility."

This arrangement differs from that disclosed in O'Halloran, in which all air flowed to the "chase" (see Figures 3-7) is derived from the open ambient environment of the "bay." Taking Figure 3 of O'Halloran (reproduced below for ease of discussion) as an example,

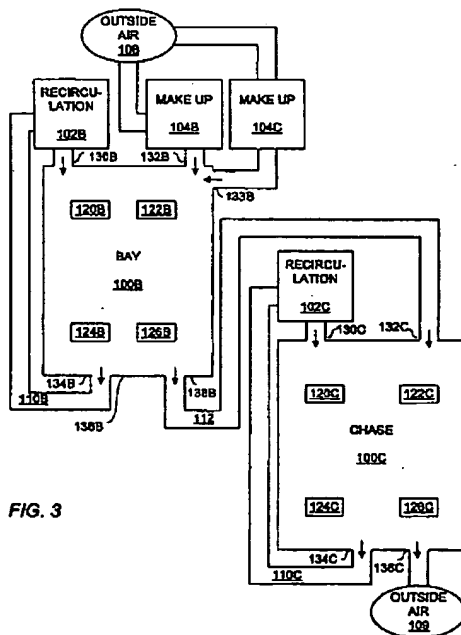


FIG. 3

it is seen that the air flowed by O'Halloran to the chase in the duct 112 is taken from the bulk ambient air environment of the bay, and is NOT "air exhaust" as that term is defined in applicants' specification and used in applicants' claims, i.e., it is not "an air stream that is flowed through process tool housings, cabinets, fume regions, abatement units, containment enclosures, and other discrete volumetric regions within the plant." This is true of all of O'Halloran's arrangements, including the partial discharge to the outside air arrangement of Figure 4 of

O'Halloran (in which all air flowed to the chase is taken from the bulk ambient environment of the bay), the movable tube arrangement of Figure 5 of O'Halloran (which still takes in air from the bulk air environment of the bay), the air duct shutoff valve arrangement of Figure 6 of O'Halloran (which still take air into the duct from the bulk air environment of the bay), and the intermediate recirculation unit arrangement of Figure 7 of O'Halloran (in which all air flowed to the chase is taken from the bulk ambient environment of the bay).

Thus, it is significant that O'Halloran does not show any air flows to, from or through any of the tools in the bay or in the chase (equipment 120B, 122B, 124B, 126B, 120C, 122C, 124C or 126C), and O'Halloran contains no teaching or suggestion of any air flows "through process tool housings, cabinets, fume regions, abatement units, containment enclosures, and other discrete volumetric regions within the plant" (instant specification, paragraph [0011]), such as would constitute "air exhaust" within the meaning of applicants' claims.

For such reason, claim 1, requiring a semiconductor manufacturing process facility "wherein air exhaust is flowed through a discrete volumetric region of said clean room, said facility comprising an air exhaust treatment apparatus arranged to (i) receive air exhaust after flow thereof through said discrete volumetric region of said clean room, (ii) produce a treated air exhaust, and (iii) recirculate the treated air exhaust to an ambient air environment of the facility," is patentably differentiated from the system of O'Halloran.

Accordingly, claim 1, and claims 2-13 and 24-30 dependent (directly or indirectly) thereunder are patentable over O'Halloran, as is method claim 14, reciting "wherein air exhaust is flowed through a discrete volumetric region of said clean room, said method comprising treating air exhaust after flow thereof through said discrete volumetric region of said clean room to produce a treated air exhaust, and recirculating the treated air exhaust to an ambient air environment of the facility," and claims 15-23 dependent thereunder.

Concerning the rejection of claims 6-8 and 18 based on O'Halloran in view of Homeyer, Homeyer has been cited for teaching of a heat exchanger in an air purification system, with an asserted motivation of providing a heat exchanger as taught by Homeyer in the exhaust treatment of O'Halloran in order to cool down the air flow passing through.

In fact, there is no motivation, since Homeyer teaches a system for catalytic decomposition of "odor-causing compounds such as sulfur, oxygen, or nitrogen containing compounds, and carbon monoxide, and ozone" (column 2, lines 9-11 of Homeyer) in which a heat exchanger is employed for "increasing the temperature of the inlet air flow 16 to a first temperature preferable in a range 250-350°F" to provide a temperature of the air that is suitable for catalytic reaction, following which the gas is cooled by heat exchange to make it suitable for flow to the ambient environment of a residential or commercial building (see column 2, lines 7-8 and column 2, lines 34-65 of Homeyer).

Thus, the motivation urged by the examiner, "to cool down the air flow," in fact ignores the express teaching of Homeyer of **heating up the influent air for catalytic decomposition**, after which the air must be cooled down to render it acceptable for flow into the residential or commercial building.

One of skill in the art would therefore begin with O'Halloran, which itself does not describe or suggest any deficiency in the system or operation disclosed in the O'Halloran reference, raising the question, why would anyone reading O'Halloran in any way be motivated to look outside of such patent for any cooling capability means or technique, to import into O'Halloran? There is NO disclosed thermal deficiency in O'Halloran of the systems and/or operation therein disclosed, nor is any thermal deficiency apparent from a reading of O'Halloran. Further, if someone were looking for such cooling after reading O'Halloran (despite the any of any motivational basis in the O'Halloran reference itself for such modification), one would logically reject Homeyer as a source of further implementation, since Homeyer teaches to **HEAT UP** the influent air for catalytic decomposition (nowhere does O'Halloran mention or suggest any catalytic decomposition), as a result of which heating the air must be cooled back down. Any implementation of Homeyer in O'Halloran would therefore appear superfluous to any needs or objectives of O'Halloran, and would additionally appear to needlessly increase the energy consumption, and capital and operating costs of the O'Halloran system, beyond any reasonable or logical application or extension of O'Halloran's clear and explicit disclosure.

It is fundamental law that teachings of references can be combined only if there is some suggestion or incentive to do so. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577 (Fed. Cir. 1984). Additionally, the mere fact that references can in some way or ways be combined or

modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990).

Here the prior art does not suggest the desirability of the combination – in fact, the cited art when combined in the manner proposed by the examiner evidences the undesirability of the proposed modification, by necessarily importing superfluous heating of the air stream for catalytic decomposition.

Furthermore, even if the Homeyer reference were arbitrarily deconstructed to isolate therefrom only a “cooling down” capability (even though such deconstruction is improper as a manner of obviousness analysis), the resultant modified O’Halloran/Homeyer system would still not be equivalent to or suggestive of applicants’ claimed invention, since it would still lack the “air exhaust” features of applicants’ claims.

It therefore is respectfully requested that the examiner reconsider the rejection in light of the amendments and foregoing remarks, and upon reconsideration allow the claims 1-23, as well as claims 24-30 added herein, which depend directly or indirectly from claim 1.

Fee Payable for Added Claims 24-30

In connection with the addition of new claims 24-30 herein, an added claims fee of \$350 is due for the addition of seven (7) dependent claims, beyond the number for which payment previously was made.

A Credit Card Authorization form is enclosed for payment of the added claims fee. Authorization hereby is given for charging of any additional fee or amount that may be properly payable in connection with the entry of this Amendment, to Deposit Account No. 08-3284 of Intellectual Property/Technology Law.

CONCLUSION

Claims 1-30 as amended/added herein are patentably distinguished over the art and in form and condition for allowance. Favorable action therefore is requested.

If any issues remain, incident to the allowance of the application, the examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss their resolution, in order that the application can be passed to issue at an early date.

Respectfully submitted,



Steven J. Hulquist
Reg. No. 28,021
Attorney for Applicants

INTELLECTUAL PROPERTY/
TECHNOLOGY LAW
P.O. Box 14329
Research Triangle Park, NC 27709
Phone: (919) 419-9350
Fax: (919) 419-9354
Attorney File No.: 2771-622 CIP (7487)